TENNESSEE WATERSHED AND REGIONAL WATER RESOURCES MODELING (TN2WaRM)

Contact: Yvette Clark (yrclark@tntech.edu) ~ (931) 372-3004

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GATEWAY TO WATER RESOURCES PLANNING

TN2WaRM is a gateway to watershed modeling to help decision makers effectively plan for water resource management.

BACKGROUND

- At first glance, Tennessee seems to have an abundance of water from the Cumberland and Tennessee river systems. But with increasing populations and industrial usages and uncontrollable environmental conditions, it is evident how scarce water could become in our state. The record drought of 2007 made it clear that the State of Tennessee needed to evaluate the planning process for water resources to be better prepared for water limitations.
- In response, the State organized a Water Resources Technical Advisory Committee to make recommendations on water resource issues. The committee’s intent was to develop a drought planning process.
- For this task, the committee chose the Hydrologics Inc. hydrology modeling software called OASIS that is used for water supply planning. OASIS is a general-purpose, water resources simulation/optimization software provides users to a water resources planning tool in an unlimited number of applications.

CURRENT WATER SUPPLY STUDY AREAS

In 2008, the Water Resources Technical Advisory Committee and other regional planning experts initiated a water resources planning pilot in two areas significantly impacted by the drought of 2007: North Central Tennessee and the Southern Cumberland region. These projects are near completion.

The committee felt that these pilot projects would provide a planning framework for sustainable growth and water supply while protecting all uses of our waters. Each regional model would evaluate the current and projected uses of surface waters against the amount of water available in each region. The OASIS software, which is being used in both of the pilot areas and by the Duck River Agency, can be applied in the areas of river basin management, water supply, hydropower, and conflict resolution. Critical to these planning phases is the determination of how much flow is needed to support and sustain the aquatic life present in specific watercourses.

TENNESSEE TECHNICAL UNIVERSITY’S CENTER FOR THE MANAGEMENT, UTILIZATION AND PROTECTION OF WATER RESOURCES (CMUPWR) will build on the work completed through these two pilot studies and make the OASIS software available to technical and non-technical users throughout the state. The existing pilot studies mentioned above will be accessible as well as the Duck River model. Technical users will be able to make changes to those models and generate different outputs, which will be available online to the technical users and the general public, or entirely new studies can be developed. The overall purpose of this work is to lead the State in developing water resources planning guidelines. The project should be continued as the OASIS software potentially allows for extensive uses in city, county, and regional hydrologic modeling.

The Center will take the following steps in initiating OASIS’s access statewide:
- A statewide license to use the OASIS modeling suite will be acquired so that the software can be made available to multiple users throughout the State.
- The CMUPWR will purchase and configure a computer server on which to house and run various applications of the OASIS model. The collection of applications on the server will be known generically as TN_OASIS.
- The CMUPWR will develop an Internet interface through which users can access TN_OASIS.
- Initially, three applications will be installed: (1) the Portland/North Central Pilot area, (2) the Southern Cumberland Plateau Pilot area, and (3) the Duck River application developed by Hydrologics for the Duck River Agency. Other applications will be added as they are developed.
- The CMUPWR will develop training courses for using the OASIS software.

GOING FORWARD

- A collaborative venture among the Center for the Management, Utilization, and Protection of Water Resources at Tennessee Technological University; the Tennessee Department of Environment and Conservation; the U.S. Geological Survey; U.S. Army Corps of Engineers; and Hydrologics, Inc.

PARTICIPANTS

The OASIS software will be made available across the state via the Internet.

The initial three applications to be installed are the Portland/North Central Pilot area, the Southern Cumberland Plateau Pilot area, and the Duck River.